



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,800	06/27/2003	Kramadhari V. Ravi	42P16832	6510
8791	7590	04/01/2005	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			DANG, PHUC T	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,800

Applicant(s)

RAVI, KRAMADHATI V.

Examiner

PHUC T. DANG

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-22 is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 23, 25 and 27 is/are rejected.
- 7) ☒ Claim(s) 4-8, 24 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>030705</u> | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2818

DETAILED ACTION

Oath/Declaration

1. The oath/declaration filed on June 27, 2003 is acceptable.

Information Disclosure Statement

2. The office acknowledges receipt of the following items from the applicant:

Information Disclosure Statement (IDS) filed on March 7, 2005.

Specification

3. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2818

4. Claims 1-3 and 9 are rejected under 35 U.S.C. 102 (b) as being anticipated by Tanabe et al., hereinafter "Tanabe" (U.S. Patent No. 5,736,226).

Regarding claim 1, Tanabe discloses a method of forming a substantially planar diamond coated silicon wafer comprising:

forming a diamond coated silicon wafer comprising forming a diamond layer (102, Fig. 4) on a silicon substrate (100, Fig. 4) that induces a compressive stress in the silicon substrate [col. 17, lines 22-24]; and

tuning the planarity of the diamond coated silicon wafer by roughening a first surface (102, Fig. 5) of the diamond coated silicon wafer [col. 11, lines 38-52].

Regarding claim 2, Tanabe discloses a step of roughening the first surface of the diamond coated silicon wafer induces a tensile stress that cancels the compressive stress in the silicon substrate [col. 6, lines 32-37].

Regarding claim 3, Tanabe discloses tuning the planarity of the diamond coated silicon wafer comprises decreasing the magnitude of a first surface first deflection and a second surface first deflection in the diamond coated silicon wafer [Fig. 5 and col. 11, lines 50-51].

Regarding claim 9, Tanabe discloses roughening the first surface of the diamond coated silicon wafer comprises introducing defects in the first surface of the diamond coated silicon wafer [Figs. 17-19 and col. 10, lines 5+].

5. Claims 23 and 25 are rejected under 35 U.S.C. 102 (b) as being anticipated by Cuomo et al., hereinafter "Cuomo" (U.S. Patent No. 5,225,926).

Art Unit: 2818

Regarding claim 23, Cuomo discloses a microelectronic structure, comprising:

a diamond layer (101, Fig. 1a) on a silicon substrate (102, Fig. 1a), and
a strained silicon device layer (104, Fig. 1c) on the diamond layer (101, Fig. 1c) [col. 6, lines 7-23].

Regarding claim 25, Cuomo discloses wherein the strained silicon device layer comprises a plurality of circuit components [col. 6, lines 52-58].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cuomo in view of Tanabe.

Cuomo discloses all the features of the claimed invention as discussed above, but does not disclose the diamond layer is between about 25 and 200 microns thick.

Tanabe, however, discloses the diamond layer is between about 25 and 200 microns thick [col. 16, lines 49-50].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the diamond layer is between about 25 and 200 microns thick of Cuomo as taught by Tanabe for a purpose of improving a microelectronic structure.

Art Unit: 2818

Allowable Subject Matter

7. Claims 10-22 would be allowed.

The following is a statement of reason for the indication of allowable subject matter:

Claims 10-22 are considered allowable since the prior art of record and the considered pertinent to the applicant's disclosure does not teach or suggest the claimed invention having a step of tuning the planarity of the diamond coated silicon wafer by forming a first polysilicon layer on a first surface of the diamond coated silicon wafer as cited in claim 10 and a step of forming a first polysilicon layer on a first surface of the flatness-tuned diamond coated silicon wafer and a second polysilicon layer on a second surface of the flatness-tuned diamond coated silicon wafer as cited in claim 15 and a step of providing a flatness tuned diamond coated silicon wafer comprising a first polysilicon layer disposed on a first surface of the flatness tuned diamond coated silicon wafer and a second polysilicon layer on a second surface of the flatness tuned diamond coated silicon wafer as cited in claim 21.

Claims 4-8, 24 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the Prior Art made of record discloses a step of forming the diamond coated silicon wafer comprises forming the diamond layer at a temperature below a CTE crossover temperature as cited in claim 4 and wherein roughening the first surface of the diamond coated silicon wafer comprises grinding as cited in claim 8 and wherein the strained silicon device layer comprises a

Art Unit: 2818

tensile strain greater than about 1 percent as cited in claim 24 and wherein the strained silicon device layer comprises a silicon on insulator (SOI) structure as cited in claim 26.

Claims 5-7 are directly or indirectly depend on the objected claim 4, then, they also would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and After Final communications.

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang

Primary Examiner

Art Unit 2818

P.D.

